

## Preparation and physical properties of biodegradable films using nano-sized copolymers

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In this study, biodegradable films are prepared by using corn starch, polyvinyl alcohol (PVA), nano-sized copolymer particles, and additives. Glycerol (GL), xylitol (XL) tartaric acid (TA), and citric acid (CA) were used as additives. Nano-sized copolymer particles with hydrophobic and hydrophilic properties (polymethyl methacrylate-co-acrylamide, and polymethyl methacrylate-co-methacrylic acid) were synthesized by the method of emulsion polymerization. The morphology and the physical properties such as tensile strength (TS), elongation (%E), degree of swelling (DS), and solubility (S) of biodegradable films were investigated. The results verified that with the increase in hydrophobic monomer contents of nano-sized copolymer particles, the TS and DS values of films were increased, whereas %E and S values were decreased. Also, The thermal analysis of films was measured by using differential scanning calorimeter (DSC), and the biodegradation of films was carried out using the soil burial test.